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ABSTRACT

This study investigates the validity of the Teacher Performance Assessment Instruments (TPAI) as they relate to the achievement of pupils taught by student teachers. Five separate instruments compose the TPAI: 1) teaching plans, 2) classroom procedures, 3) interpersonal skills, 4) professional standards, and 5) student perceptions. Participating student teachers prepare an instructional unit plan portfolio, administer a teacher-made pretest to the pupils, teach the unit, and close with a posttest on material taught in the unit. Supervising teachers and college supervisors observe the process, using the TPAI rating scales to reach conclusions. Comparative results of the observations of this study are presented in tabular form and an analysis of the results is presented. (JD)

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Relating Pupil Achievement Gains to Ratings of Secondary Student Teachers' Performance

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Assessment is an integral part of student teacher supervision for both the classroom teacher supervisor and the college supervisor. Unfortunately, assessment is often an informal or non-systematic process. During formative assessments the supervisor might observe and discuss the lesson with the student teacher in a spontaneous, or clinical fashion. Particular strengths or weaknesses in the lesson will be highlighted depending on the biases of the supervisors. Similarly, a summative evaluation might be based on another informal appraisal culminated with an "S" or "U" grade.

When assessment instruments are used in student teaching programs, the nature of the feedback given to the student teacher changes. Frequently there are ratings, numbers, counts, profiles or other similar analyses. During formative activities these instruments might be well-known research instruments of interest to faculty members at the particular institution. For example, feedback might be based on the TSOD or some derivative of Flanders' scheme. The summative assessments usually do not involve research instruments. Rather, they tend to be locally developed or selected tools which appear to match the objectives of the student teaching experience. The use of measurements implies that there is greater validity and reliability to these assessments than can be obtained in the more open, clinical assessments. The truth of that assumption has not been tested.

Recent legislation in Georgia (and more recently in South Carolina) has mandated the use of instruments with documented validity and reliability during student teaching. Both of these states have enacted

legislation which requires that student teachers be assessed during classroom teaching prior to certification. The potential of litigation requires that the instruments be psychometrically sound and assessment process be fair before they are used for certification.

The Teacher Assessment Project at the University of Georgia has been commissioned by the Georgia Department of Education to develop instruments for use in assessing the classroom performance of teachers and student teachers prior to certification. The Teacher Performance Assessment Instruments (TPAI) are the product of Project development efforts. The Teacher Assessment Project staff has conducted a number of studies of the TPAI to document their technical characteristics when used with student and beginning teachers.

This study is one of a series of process/product studies which have been designed to investigate the validity of the TPAI as they relate to the achievement of pupils taught by beginning and student teachers.

The Teacher Performance Assessment Instruments

The Teacher Performance Assessment Instruments (TPAI) are designed to determine how well teachers can demonstrate certain minimum teaching skills which are considered to be generally essential to effective instruction. Although originally designed for teacher certification, the TPAI are used in a variety of ways. A widespread use of the instruments to date has been for inservice educational development of teachers. In addition, the TPAI are used by preservice teacher education programs as guides for assessment of teaching performance. The instruments are also considered valuable for conducting teacher effectiveness research and

as one source of determining the objectives and content for teacher education programs.

Content of the TPAI

Development of the TPAI began in Spring 1976. Hundreds of statements which describe teaching skills most frequently mentioned in research studies and related professional literature were derived from a variety of sources. They were then sorted and edited to create content for a survey instrument which was administered to a stratified sample of 4,668 subjects. Subgroups of teaching specialists were identified and their survey responses compared. All subgroups agreed as to the most important teaching skills and awarded them approximately the same order of priority. Only teaching skills classified as generic and essential were used in the construction of the TPAI (Johnson, Okey, Capie, and Ellett, RPB 78-1, 1978).

The Instruments

Five different instruments compose the TPAI: Teaching Plans and Materials, Classroom Procedures, Interpersonal Skills, Professional Standards and Student Perceptions. Only the first three instruments ar recommended for certification purposes. The Professional Standards and Student Perceptions Instruments are used for professional development and research purposes.

The Teaching Plans and Materials Instrument (TPM) focuses on teaching skills which relate to preparation for instruction. The teacher being assessed is asked to prepare a portfolio for an instructional unit. After studying the portfolio and interviewing the teacher, trained data collectors rate instrument items relative to planning, selecting objectives, and choosing materials and equipment.

The Classroom Procedures Instrument (CP) focuses on actual classroom practices. Data collectors use this instrument to identify teaching practices in an ongoing classroom setting. Thus, direct classroom observation becomes the major source of assessment data. The testing skills which form the basis for this instrument center on teaching methods and techniques.

The Interpersonal Skills Instrument (IS) describes the teacher's proficiency in creating a comfortable social atmosphere, demonstrating warmth and friendliness, and managing classroom interactions. Scores on this instrument are also based on direct observations of the teacher's performance during classroom instruction.

Scoreable Units

The TPAI are based on the assumption that a professional skill is a complex set of interrelated behaviors. Statements which identify these skills are, therefore, general. Thus, second- and third-order descriptions of behavior were created to facilitate assessment. Indicators are second-order, sentence-length statements, scored on a scale from 1-5, which provide more detailed behavioral descriptions of teaching skills. The more indicators a teacher demonstrates, the more likely the teacher is demonstrating the skill. Descriptors are third-order definitions of behavior which provide a means of associating teacher behavior with scale points for scoring.

An example of how statements of teaching skills, indicators and descriptors combine to determine the quality of observed teacher performance can be seen by examining Skill VII, "Communicates with learners." One of the five indicators for this skill is shown below. The five descriptors and the associated scale used to score a teacher's performance on this indicator are listed following the statement of the indicator.

Indicator 7.

Scale of Descriptors

1. Accepts learner comments or performance without feedback about their adequacy.

2. Responds to negative aspects of student work, but few comments are made about positive aspects.

3. Informs students of the adequacy of their performance. Few errors pass by without being addressed.

4. Helps learners evaluate the adequacy of their own performance.

5. In addition to 4, the teacher probes for the source of misunderstandings which arise.

General Assessment Procedures

Each teacher assessed with the TPAI should be assessed by two or more persons on each of the instruments. The types of assessors might be special data collectors, peer teachers, colleagues, department heads, supervisors or principals. For student teachers, the college supervisor and supervising teacher are the data sources.

The teacher being assessed might expect to devote approximately an hour to being interviewed by the persons assigned to obtain data prior to demonstrating teaching skills in the classroom. Observation and rating of teacher behavior can usually be accomplished during a typical instructional period.

Each data source is expected to rate the teacher independently of the others. The TPAI scoring procedures require each data source to rate the teacher being assessed on each indicator by choosing the descriptor (on a 1-5 scale) which best fits the teacher's behavior. Scores awarded by the three data sources for each indicator associated with a skill are summed and divided by the number of ratings made. The final score for any skill is a mean which ranges from 1.00 to 5.00.

Objective

The purpose of this study was to determine the relationship between pupil achievement and various TPAI scores generated for a sample secondary student teachers. Positive correlations are considered supportive of the predictive validity of the instruments and the underlying competencies.

Procedures

The cooperation of four Georgia colleges was obtained to conduct this study. Officials at each school identified student teachers who agreed to participate during winter quarter, 1979. Complete data were available for 30 subjects who represented a variety of academic subject areas in grades 7-12. Each of the student teachers prepared an instructional unit plan portfolio, as usual before a TPAI assessment. All teacher and pupil data were collected in conjunction with this ten day-unit.

Data Sources

Prior to teaching the unit, a teacher-made test of unit objectives was administered to pupils who would receive instruction. The same instrument was used at the close of the unit as a post-test. The teachers were instructed to use an objective item test format and to include a balance of item types among the 25 or more items. The tests and objectives were not externally reviewed as in other TPAI validation studies. A teacher effectiveness index called the percentage of the possible gain was generated from the pre- and post-test scores. The percentage of the possible gain is computed by dividing the actual gain (post-test - pre-test) by the possible gain (total possible - pre-test) and multiplying by 100. The characteristics of this scale and other similar indeces have been discussed elsewhere (Safter, W., Tobin, K., and Capie, W., 1980).

Teacher performance ratings were generated by the supervising teacher and the college supervisor. Each rated a set of 49 indicators which were used to compute 17 competency scores for four TPAI instruments. In addition, factor scores were generated according to procedures described by Tobin, Capie, Ellett, and Johnson (1980).

Data Analyses

Pearson product-moment correlations were computed between the effectiveness indices and the teacher performance measures (49 ratings and 17 competency means). Correlations were computed between the ratings of each data source and the composite of both data sources. The factor scores were used in regression analyses to predict student achievement.

Results

Seventy-five significant correlations were identified from among a total of 154. Twenty-nine of these were derived from scores generated by the classroom teacher. Eleven significant correlations were derived from the college supervisors' ratings. A summary of the correlational data is contained in Table 1.

Several correlations approached .50. The college supervisors' ratings of TPM 1 (r=.50, selects objectives), the classroom supervisors' ratings of TPM 10 (r=.48, communicates with learners about their progress), TPM 7 (r=.46, organizes instruction to take into account differences among learners in their learning styles), and CP 5 (r=.45, clarifies lesson content when learners misunderstand) all were moderately correlated with achievement gains. A complete listing of indicators and the correlations is contained in Table 2. A complete listing of the competencies and correlations is contained in Table 3.

Table 1

Summary of Significant Correlations

	Classroom Teachers	College Supervisors	Composite
Number of Indicators	49	49	43
Number of Significant Correlations	20	7	21
Number of Competencies	17	17	17
Number of Significant Correlations	9	4	11
Number of Factors	*	*	4
Number of Significant Correlations	*	*	3

* Analyses for individual data sources not undertaken.

Table 2

Correlations of Pupil Achievement Gains with TPAI Indicator Ratings

	Indicators	Principal[1] Factor	College Supervisor	Classroom Supervisor	Combined
TPM 1	Specifies or selects learner objectives for lessons.	G	.50**	.29	.47**
TPM 2	Specifies or selects teaching procedures for lessons.	G	.32*	.42**	.41*
TPM 3	Specifies or selects content, materials, and media for lessons.	G	.14	.38*	.29
TPM 4	Specifies or selects materials and plans for assessing learners.	G	.14	.06	.04
TPM 5	Plans instruction at a variety of cognitive levels.	L	.03	.32*	.28
TPM 6	Organizes instruction to take into account differences among learners in their capabilities.	G	.09	.34*	.27
TPM 7	Organizes instruction to take into account differences among learners in their learning styles.	G	.24	.46**	.44**
TPM 8	Organizes instruction to take into account differences among learners in their rates of learning.	G	.22	.33*	.31*
TPM 9	Uses teacher-made or selected evaluation materials to obtain information about learner progress.	G	.14	.16	.20

Table 2 (Continued)

	Indicators	Principal Factor	College Supervisor	Classroom Supervisor	Combined
TPM 10	Communicates with individual learners about their needs and progress.	G	.17	.48**	.39*
TPM 11	Obtains test results and teacher observation data on the effectiveness of instruction.	G	.28	.37*	.42**
TPM 12	Uses data to revise instruction when needed.	G	.11	.30	.24
CP 1	Uses audiovisual and other instructional equipment.	G	.24	.37*	.35
CP 2	Uses instructional materials that provide appropriate practice on the objectives.	G	.31*	.35*	.41**
CP 3	Organizes learning activities in a logical sequence.	M	.35*	.17	.32*
CP 4	Gives clear directions and explanations.	M	.20	.25	.30*
CP 5	Provides directions and explanations when learners misunderstand.	M	.23	.45**	.42**
CP 6	Conveys the impression of knowing what to do and how to do it.	L	.31*	.21	.32*
CP 7	Uses acceptable written and oral expression with learners.	L	.10	.26	.24

Table 2 (Continued)

	Indicators	Principal Factor	College Supervisor	Classroom Supervisor	Combined
CP 8	Uses responses and questions from learners in teaching.	L	.00	.30	.18
CP 9	Provides learners with opportunities for participating.	M	.25	.27	.29
CP 10	Demonstrates ability to conduct lessons using a variety of teaching methods.	L	.07	.02	.06
CP 11	Uses teaching methods appropriate for objectives and learners.	M	.04	.37*	.36*
CP 12	Demonstrates ability to work with individuals, small groups, and large groups.	M	.22	.30*	.31*
CP 13	Uses procedures which initially get learners involved in lessons.	L	.36*	.38*	.42**
CP 14	Maintains learner involvement in lessons.	M	.26	.20	.28
CP 15	Demonstrates knowledge in the subject area.	L	.05	.24	.20
CP 16	Presents accurate information about the topic being taught.	L	.23	.20	.26
CP 17	Provides learners with information on the purpose and importance of topics.	L	.38*	.24	.44**

Table 2 (Continued)

	Indicators	Principal Factor	College Supervisor	Classroom Supervisor	Combined
CP 18	Attends to routine tasks.	M	.23	.32*	.36*
CP 19	Organizes materials for efficient use by learners.	M	.25	.07	.22
CP 20	Provides a learning environment that is attractive and orderly.	-	.12	.37*	.31*
CP 21	Uses special or unexpected events to supplement lessons.	-	.09	.12	.07
CP 22	Makes modifications in lessons as needed.	-	.29	.02	.08
IS 1	Communicates personal enthusiasm.	L	.13	.35*	.27
IS 2	Communicates with learners in a way that conveys interest in them and in the subject.	L	.01	.34*	.22
IS 3	Demonstrates warmth and friendliness.	L	.14	.32*	.34*
IS 4	Demonstrates sensitivity to the needs and feelings of learners.	L	.07	.21	.18
IS 5	Demonstrates patience, empathy, and understanding.	M	.18	.13	.20
IS 6	Provides feedback to learners about their behaviors.	M	.23	.20	.32*

Table 2 (Continued)

	Indicators	Principal Factor	College Supervisor	Classroom Superivsor	Combined
IS 7	Promotes comfortable interpersonal relationships.	M	.20	.26	.35*
IS 8	Manages disruptive behavior among learners.	M	.11	.23	.23
IS 9	Maintains appropriate classroom behavior.	M	.05	.33*	.26
PS 1	Works cooperatively with supervisors and administrators.	P	.21	.08	.13
PS 2	Follows the policies and procedures of the school district.	P	.35	.24	.44*
PS 3	Demonstrates ethical behavior.	P	.19	.25	.32
PS 4	Carries out instructional duties.	P	.31	.11	.23
PS 5	Obtains and evaluates data on professional skills.	P	.36	.09	.29
PS 6	Obtains information to aid teaching.	P	.26	.29	.32

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1 Factor Designations are as follows: G = General Teaching Effectiveness; L = Learning Environment; M = Classroom Management; P = Professional Standards.

* $p < .05$

** $p < .01$

Table 3

Correlations of Pupil Achievement Gains with TPAI Competency Scores

	Competency	College Supervisor	Classroom Supervisor	Combined
1.	Plans instruction to achieve selected objectives.	.26	.36*	.36*
2.	Organizes instruction to take into account individual differences among learners.	.19	.42*	.37*
3.	Uses instructional techniques, methods, and media related to the objectives.	.35*	.44*	.46**
4.	Communicates with learners both orally and in writing.	.30*	.35*	.38*
5.	Reinforces and encourages the efforts of learners.	.17	.31*	.28
6.	Demonstrates a repertoire of teaching methods.	.20	.29	.27
7.	Uses procedures which involve the learner in the instruction.	.35*	.38*	.44**
8.	Demonstrates an understanding of the school subject being taught.	.27	.29	.33*
9.	Organizes time, space, materials and equipment for instruction.	.23	.29	.32*
10.	Adjusts instruction to changes in conditions.	.14	.03	.06

Table 3 (Continued)

Competency	College Supervisor	Classroom Supervisor	Combined
11. Demonstrates enthusiasm for teaching and learning and the subject being taught.	.03	.35*	.23*
12. Helps learners develop positive concepts of themselves.	.16	.24	.26
13. Manages classroom interactions.	.21	.29	.34*
14. Obtains and uses information about the needs and progress of individual learners.	.19	.34*	.37*
15. Obtains and uses information about the effectiveness of instruction to revise it when necessary.	.20	.39*	.35*
16. Meets professional responsibilities.	.37*	.17	.32
17. Engages in professional self-improvement.	.32	.22	.33

* $p < .05$

** $p < .01$

The four factors produced three significant correlations. Factors termed General Teaching Effectiveness, Learning Environment and Classroom Management all correlated on the order of .40 with mean achievement gain (.39, .38 and .39, respectively). The Professional Standards factor correlation was near zero (r=.02).

When the three instruction related factors were regressed against achievement gains, an R^2 value of .18 was obtained. However, any one of the three factor scores alone produced an R^2 value of .15.

Discussion

Perhaps the most striking observation about these results is the greater number of significant correlations among the ratings of the classroom teachers as compared to the college supervisors. Nearly three times as many significant relationships existed among the classroom teachers' ratings as among those from college supervisors (29 to 10). In addition, four of the teachers' ratings of competencies failed to produce significant correlations by a narrow margin (.29 compared to .30 criterion). Two ready explanations exist for these differences. The classroom teachers do have more data about the student teachers' performance and the student teaching context; this information may have made ratings more accurate. Also, training differences (length) may have existed among raters. For a variety of reasons college personnel are typically less proficient in using the TPAI than are public school personnel.

In spite of the differences in the data sources, the combined data yielded a greater number of significant correlations than individual data sources. When the combined data were used in a multiple regression, 18 percent of the variation in class mean achievement gains was predicted.

This finding is similar to the results for a sample of elementary student teachers where each factor alone explained as much achievement variation as did the set in a multiple regression (Capie, W., Tobin, K., and Bowell, M., 1980). Even though the achievement variance explained in this study is somewhat less than in the study of elementary classes, these results may be more generalizable in that a more representative set of observers was employed.

For the most part, the importance of various indicators and competencies is apparant from examining Tables 2 and 3. However, there are two interesting differences in the elementary study and this study. Although the management factor was an important predictor in both cases, the obvious management indicators (IS 8, 9) did not significantly relate to achievement for this sample of secondary student teachers. Yet, more subtle management items such as manages routines (CP 18) and clarifies content when learners misunderstand (CP 5) did predict achievement. A second important finding here is the importance of planning skills in explaining achievement gains. The TPM indicators which failed to produce significant correlations all related to assessment (TPM 4, 9 and 12), typically a weak area for beginning teachers.

While there were some indicators which failed to produce significant correlations, nearly every competency reached or approached significance levels. Competencies are to be the unit of certification in Georgia. The exception, adjusts instruction to changing conditions, was deleted from the current instrument as being "unassessable" in the context of the TPAI assessment. Similarly, the Professional Standards Instrument is not part of the certification procedure.

Conclusions

The findings of this study contribute to the definition of what is an effective student teacher. The importance of planning, in particular, is highlighted since many of the Classroom Procedures dimensions also reflect planning (i.e., CP 1, 2, 11, 12, 13).

Equally important is the demonstration that the TPAI are valid measures of important dimensions of teaching. In the hands of trained raters, the TPAI do facilitate discrimination between effective and ineffective teachers. Consequently, they could become a useful supervisory tool in working with student teachers throughout their practical experience.

References

Capie, W., Johnson, C., Anderson, J., Ellett, C., and Okey, J. Teacher Performance Assessment Instruments, Athens: Teacher Assessment Project, 1979.

Capie, W., Tobin, K., and Bowell, M. "Using Pupil Achievement to Validate Ratings of Student Teacher Performance." Paper presented at AERA, Boston, April 1980.

Johnson, C., Okey, J., Capie, W., Ellett, C., and Adams, P. Identifying and verifying generic teacher competencies, Athens: Teacher Assessment Project, 1978.

Tobin, K., Capie, W., Ellett, C., and Johnson, C. "A Confirmatory Analysis of the Factor Structures of Teacher Performance." Paper presented at EERA, Norfolk, March 1980.

Safter, W., Tobin, K., and Capie, W. "An Empirical Analysis of Teacher Effectiveness Indices Based on Class Mean Change Scores," Paper presented at EERA, Norfolk, March 1980.